

CLAIMS

1 1. A method for cooling a computer system, the computer system having a
2 processor and a fan, said method comprising:
3 determining a temperature threshold for operating the fan at greater than low
4 speed;
5 determining a temperature of the computer system; and
6 throttling the processor if the temperature corresponds to the temperature
7 threshold for operating the fan at greater than low speed.

1 2. The method of claim 1, further comprising:
2 determining a high-temperature threshold for the computer system; and
3 beginning the throttling of the processor prior to the temperature of the
4 computer system exceeding the high-temperature threshold.

1 3. The method of claim 2, further comprising:
2 operating the fan at greater than low speed if the throttling is inadequate to
3 maintain the temperature of the computer system below the high-temperature
4 threshold.

1 4. The method of claim 2, wherein the high-temperature threshold for the
2 computer system is a high-temperature threshold for the processor.

1 5. The method of claim 2, wherein the fan is a continuously variable fan; and
2 wherein operating the fan at greater than low speed involves operating the fan
3 at a highest speed of the fan.

1 6. A method for cooling a computer system, the computer system having a
2 processor and a fan, said method comprising:
3 operating the fan at a first acoustic level;
4 determining power usage of the computer system;
5 throttling the processor if the power usage corresponds to operating the fan at
6 an increased acoustic level such that the processor is throttled to cool the computer
7 system prior to operating the fan at the increased acoustic level.

1 7. The method of claim 6, further comprising:
2 operating the fan at the increased acoustic level if the throttling is inadequate
3 to maintain the temperature of the computer system below a temperature threshold for
4 operating the fan at the increased acoustic level.

1 8. The method of claim 6, wherein determining the power usage of the computer
2 system comprises determining a temperature of the computer system.

1 9. The method of claim 6, wherein:
 2 the operating, determining and throttling are associated with a reduced-
 3 acoustic mode of operation; and
 4 the method additionally comprises:
 5 operating the computer system in a normal-acoustic mode of operation in
 6 which the fan is operated at the increased acoustic level for cooling the computer
 7 system instead of throttling the processor.

1 10. A computer system comprising:
 2 a processor;
 3 a fan operative to provide cooling airflow for reducing a temperature of the
 4 processor, the fan having a temperature threshold corresponding to operation of the
 5 fan at a speed greater than low speed; and
 6 a temperature-monitoring unit operative to determine a temperature of the
 7 computer system and to throttle the processor if the temperature corresponds to the
 8 temperature threshold for operating the fan at greater than low speed.

1 11. The system of claim 10, wherein:
 2 the processor has a temperature sensor operative to generate a signal indicative
 3 of a temperature of the processor; and
 4 the temperature-monitoring system receives the signal generated by the
 5 temperature sensor for determining the temperature of the computer system.

1 12. The system of claim 10, wherein the temperature sensor is a thermal diode.

1 13. The system of claim 10, wherein the temperature-monitoring unit throttles the
2 processor by providing a signal corresponding to a pulse width modulation output of
3 the temperature-monitoring unit to the processor.

1 14. The system of claim 13, further comprising:
2 an inverter arranged to receive the pulse width modulation output of the
3 temperature-monitoring unit such that the processor receives the inverse of the pulse
4 width modulation output.

1 15. The system of claim 10, further comprising:
2 means for throttling the processor.

1 16. The system of claim 10, wherein the temperature-monitoring unit is selectively
2 operative in one of a reduced-acoustic mode and a normal-acoustic mode such that:
3 in the normal-acoustic mode, the temperature-monitoring unit attempts to
4 control the temperature of the computer system by adjusting the speed of the fan; and
5 in the reduced-acoustic mode, the temperature-monitoring unit attempts to
6 control the temperature of the computer system by throttling the processor.

1 17. The system of claim 16, wherein, in the normal-acoustic mode, if the
2 temperature-monitoring unit is unable to control the temperature of the computer
3 system by adjusting the speed of the fan, the temperature-monitoring unit also
4 throttles the processor.

1 18. The system of claim 16, wherein, in the reduced-acoustic mode, if the
2 temperature-monitoring unit is unable to control the temperature of the computer
3 system by throttling the processor, the temperature-monitoring unit also adjusts the
4 speed of the fan.

1 19. A system for cooling a computer system, the computer system having a
2 processor and a variable-speed fan, said system comprising:
3 a power-monitoring unit comprising:
4 logic configured to determine a temperature threshold for operating the
5 fan at greater than low speed;
6 logic configured to determine a temperature of the computer system;
7 and
8 logic configured to throttle the processor if the temperature
9 corresponds to the temperature threshold for operating the fan at greater than
10 low speed.

1 20. The system of claim 19, wherein the power-monitoring unit is embodied on a
2 computer readable medium.

1 21. A computer system comprising:
2 a processor;
3 a fan for cooling the processor;
4 means for determining a temperature threshold for operating the fan at greater
5 than low speed;
6 means for determining a temperature of the computer system; and
7 means for throttling the processor if the temperature corresponds to the
8 temperature threshold for operating the fan at greater than low speed.

1 22. A computer system comprising:
2 a processor;
3 a fan for cooling the processor;
4 means for determining power usage of the computer system; and
5 means for throttling the processor if the power usage corresponds to operating
6 the fan at an increased acoustic level such that the processor is throttled to cool the
7 computer system prior to operating the fan at the increased acoustic level.